

1. Examiner's Interview

The undersigned attorney appreciates the telephonic interview provided by Examiner Pham on January 28, 2004 to discuss the January 13, 2004 Office Action, the cited reference *Hyun et al.*, "WorkPlan: Constraint-Based Database for Work Package Scheduling" and whether it discloses the "quality standards" and "quality control indicator forms" noted throughout the Applicant's claims, and the interpretation of the recited claim language "machine-readable indicia" (in claims 5-9, 14, 16, and 20) and the "attachment" of tracking forms to building components (in claim 13). The undersigned attorney explained that:

- *Hyun et al.* is different from the claimed invention in both procedure/steps and in its end use/results, in that *Hyun et al.* is merely a scheduling program used for conventional CPM (Critical Path Management) scheduling of construction to ensure that no "bottlenecks" occur, whereas the Applicant's method is used for construction quality control to ensure that the constructed building is properly constructed and that later maintenance/upkeep is reduced. The Examiner stated that such arguments would require that the claims more positively distinguish the Applicant's invention from *Hyun et al.*
- "Machine-readable indicia" is a term commonly used in the art to describe matter (such as a bar code) which is read by a machine, and that this term is not understood to encompass matter typed in by a user. Similarly, the undersigned attorney explained that it is not reasonable to interpret a tracking form attached to a building component" (as recited in claim 13) as being "logically" attached, rather than physically attached (as argued by the Examiner at page 11 of the Final Office Action). The Examiner stated that his interpretations would be reconsidered if evidence was submitted that one of ordinary skill in the art would not adopt the Examiner's interpretations, and/or if the disputed terms were amended to more clearly differentiate the intended interpretation from the Examiner's interpretation.

These matters are addressed in the following sections.

2. The Amendments and the Support Therefor

No claims have been canceled, one new claim (21) has been added, and claims 1, 3, 13, 14, and 20 have been amended to leave claims 1-21 in the application.

3. Sections 2-3 of the Office Action: Rejection of Claims 1-7, 9-15, and 17-20 under 35 USC §102 in view of *Hyun et al.*, "WorkPlan: Constraint-Based Database for Work Package Scheduling"

Prior to reviewing this rejection in detail, it is initially useful to review the background of the invention. In the construction industry, building projects are almost always schedule-driven: each contractor, when assigned a contract for a portion of a building project, agrees to perform a set project, often at a set price, according to a certain schedule. If the schedule is not met, the contractor will generally face some form of financial penalty, and therefore contractors have a significant incentive to meet the schedule. Further, it is well known that delays in one portion of a construction program can propagate to (i.e., delay) other phases of the construction project; for example, in a multistory building, significant delays in installing plumbing, electrical, etc. work can occur if construction of the building's frame and floors are delayed. Thus, scheduling of construction work is of critical importance. The conventional method of construction schedule management is known as the Critical Path Method (CPM), wherein a schedule is constructed, potential critical events are identified (i.e., those "bottleneck" events which serve as predicates for later construction events), and building activities are monitored for compliance with the schedule. Greater resources can then be assigned to critical events if it appears they may deviate from the schedule, and the overall objective is to prevent such deviations from propagating to "dependent" construction events, throwing the entire project off-schedule. Prior patents cited in the present application discuss CPM at length; see, e.g., U.S. Patent 5,016,170 to *Pollalis et al.* (at column 1 line 23 onward) and U.S. Patent 4,019,027 to *Kelley* (see Abstract, and more generally the entire patent). As noted by these and other references of record, CPM is dedicated *solely* to schedule management and compliance: quality of construction is not considered. All that matters in CPM is that each construction phase be completed on time, so that any construction

phases dependent thereon can be started and completed on time.

As noted throughout the Applicants' Background of the Invention section, the focus on scheduling has deficiencies: if the focus is simply on *installaton* (or another construction task), rather than whether the installation (or other construction task) *works as intended*, the construction project may ultimately be dysfunctional, later startup and maintenance costs will increase, and/or the project will diverge from the construction schedule rather than meeting it. To illustrate, consider the situation of construction of a hospital or laboratory where regulations and/or good operation require certain air flow patterns or pressure barriers to avoid spread of disease, or of noxious fumes. If a contractor needs to make a schedule to fulfill a contract, and simply meets minimum contract standards, the standards for proper installation may not be met. As a result, the construction will not meet its intended purpose; or may require significant later repair/reinstallation/tuning costs; or if detected by a licensing agency, may require that construction be halted and redone (in which case scheduling will be badly disrupted). Thus, the Applicants' method focuses on meeting quality standards for each task, rather than on task completion (though task completion monitoring is also useful so that CPM can be performed in conjunction with quality monitoring).

As the title of the *Hyun et al.* article implies, and as noted from the outset of the *Hyun et al.* article (review the first paragraph of the *Hyun* Introduction), the WorkPlan program described by *Hyun et al.* is simply a semiautomated CPM method: the entire article (and the WorkPlan program therein) are dedicated to scheduling of mandatory construction tasks, with no consideration of quality. Looking to the claims:

Claim 1 has been amended, as per the Interview, to better differentiate "tasks" from "quality standards." It is submitted that *Hyun et al.* does not describe any "quality control indicator form wherein quality standards for one of the tasks are listed, *the quality standards being optional for completion of the task but affecting the quality of the task's completion*" (as recited in clause b.1 of claim 1), nor is one suggested. Looking to *Hyun's* page 157, Fig. 7 (which is cited as providing the limitations of claim 1, clause b), *Hyun's* WorkPlan program lists *mandatory* construction tasks/subtasks, such as "[obtain] sheet metal" and "waterproofing". Note that

starting from the last two paragraphs on page 155 through the cited paragraph on page 157, *Hyun et al.* describes the steps such as “waterproofing” as “Assignments” – i.e., these are tasks (or “subtasks” required for completion of a task) – with workers/resources being assigned a certain amount of time for each of these tasks. See the next to last full paragraph on page 155, noting that in Fig. 6, hours are assigned which “represent the time each resource will work on the specific work package”; note that these hours are then carried over from Fig. 6 to Fig. 7. Thus, in Fig. 7, worker “Gilbert Atlas” is assigned 8 hours on June 29, and 8 hours on June 30, to work on “Waterproofing.” (Worker “Gilbert Atlas” is also assigned time on July 1-4 and 8-9 for “sheet metal” work, using a “Wheel Loader” resource on July 2-3.) These tasks are mandatory, and their completion status must then be recorded on Fig. 7 (as a “Yes” or “No”), as well as any reason for variance from the schedule. This reflects the fact that *Hyun et al.* is a CPM (Critical Path Management) system which records tasks and their timing and completion, and it does not address any quality standards (e.g., whether the manufacturer’s recommended steps for application of the waterproofing material were followed; whether standards for waterproofing at joints/edges were followed; or whether any other standard for proper waterproofing was followed). It is therefore submitted that the steps recited in clause b of claim 1 are not met, nor are they in any way suggested. *Hyun et al.* is a conventional CPM system which allows one to determine whether certain mandated tasks have been completed and/or whether they are delayed, but no indication is given as to whether quality standards for each task are met.

Claim 3 is not met nor suggested by *Hyun et al.* The Examiner contends that the steps of claim 3 are described at column 2 of page 157 and in Fig. 10 of *Hyun et al.*, but *Hyun et al.* does not sample only *some* of the collected data (and this would make no sense in *Hyun et al.*, since it is a computerized system which collects *all* data). *Hyun et al.* also does not analyze the data for adherence and reasons for non-adherence to listed quality control standards: it merely displays PPC (Percentage of Planned Completed) in Fig. 10 (i.e., it only shows the percentage of completion, not the quality of completion).

Regarding *claims 5-9, 14, 16, and 20*, which all recite the use of "machine-readable indicia," *Hyun et al.* does not describe or suggest any use of "machine-readable indicia," as that term is known in the art. It is accepted that during examination, the USPTO must interpret the claims using their broadest reasonable interpretation (MPEP 2111). However, the "plain meaning" to be applied to words in a claim is the meaning applied by those of ordinary skill in the art, *not* the meaning ascribed to the term by laymen or others (MPEP 2111.01). In the art, "machine-readable indicia" is well understood (and widely used) to mean matter such as bar codes, magnetic stripes, and the like that can be read with a reading sensor/device; see the Applicant's specification at page 15 line 25, page 22 line 23, etc. As further evidence, following are other *exemplary* patents noting this same meaning (note that there are *many* more, as can be seen from a search of the USPTO's own text-searchable patent database):

- See U.S. Patent 6,712,268 to *Mason et al.* ("Method for preventing storage of duplicate barcode entries in an item security database") at column 6 lines 44-47 ("Each bar code 64A, 64B, through 64N is preferably an industry-standard bar code, but may be another type of bar code and/or machine-readable indicia.")
- See U.S. Patent 6,694,042 to *Seder et al.* ("Methods for determining contents of media") at the Abstract ("By printing documents and other objects with machine readable indicia, such as steganographic digital watermarks or barcodes, a great variety of document management functions can be enabled.")
- See U.S. Patent 6,618,348 to *Coffin et al.* ("Rear-facing autochanger bar code reader") at column 8 lines 51-54 ("The machine readable code may comprise a bar code label 34 having machine readable indicia (e.g., bars 86) provided thereon.")
- See U.S. Patent 6,542,933 to *Durst, Jr. et al.* ("System and method of using machine-readable or human-readable linkage codes for accessing networked data resources") at column 1 lines 19-22 ("This application relates to the use of machine-readable indicia and codes such as bar codes, RF-ID tags and the like, for linking to distributed data resources residing on a server in a networked computing environment such as the Internet.")

- See U.S. Patent 6,241,841 to *Mahn, Sr. et al.* ("Heat activated transfers with machine readable indicia") at the Abstract ("Due to the extreme clarity of the formed product as well as the ease by which different unique indicia can be provided with each heat activated transfer, this method and product is uniquely suitable for use in preparing coated machine-readable indicia such as bar codes.")
- See U.S. Patent 5,919,553 to *Kavanaugh* ("Microscope slide having bar code indicia inscribed thereon") at column 2 lines 9-13 ("Another object of the present invention is to provide a microscope slide having indelible machine-readable indicia which are capable of being scanned by a wide variety of conventional code readers or character recognition machines.")
- See U.S. Patent 5,625,562 to *Veeneman et al.* ("Internal bar code reading apparatus") at column 1 lines 8-12 ("The present invention relates to an apparatus and method for dispensing certificates, and more particularly, to an apparatus and method which includes reading machine-readable indicia, like barcodes.")
- See U.S. Patent 5,288,107 to *Johnson et al.* ("Multiple information field label") at the Abstract ("The upper cell of the second vertical column includes a machine-readable indicia, such as a bar code.")
- See U.S. Patent 4,914,700 to *Alasia* ("Method and apparatus for scrambling and unscrambling bar code symbols") at column 2 lines 16-22 ("Because bar code symbols have now found widespread usage to provide machine-readable indicia on tags and labels attached to merchandise such as groceries, clothing and the like, and printed on machine-read documents such as transit passes and the like, counterfeiting of the bar code symbol has become a serious problem.")

There is no support for the Examiner's interpretation that Fig. 8 of *Fyun et al.* describes or suggests any sort of machine readable indicia, particularly in view of the foregoing evidence that the meaning of "machine-readable indicia" is a common term of art indicating barcodes and the like. These rejections must be withdrawn in the absence of any supporting evidence showing that the art-understood meaning is incorrect.

The rejection of *claim 9* is also unreasonable. The Examiner contends at pages 4-5 that *Hyun et al.*'s Fig. 8 shows the matter claimed by Fig. 9:

The method of claim 5 wherein the completion indicators which include machine-readable indicia are provided on cards separate from the quality control indicator forms to which these completion indicators correspond, and wherein each card is associated with its corresponding quality control indicator form in a container.

Hyun et al. neither describes nor suggests any "cards separate from the quality control indicator forms," nor does it show any card (and its corresponding quality control indicator form) "in a container", as these terms would be understood by one of ordinary skill. If the rejection is maintained, a more detailed explanation setting forth all limitations of the claims and the corresponding disclosures in the prior art would be appreciated, more particularly, a specific indication of where *Hyun et al.* shows any cards or containers is requested.¹

The rejection of *claim 13* is also unreasonable. The Examiner asserts at page 11 of the Office Action that *Hyun et al.* teaches a tracking form that is "logically attached" to a building component prior to its installation, thereby meeting claim 13. However, one of ordinary skill would only see this interpretation if the word "logically" is inserted; otherwise, one of ordinary skill would regard the term as having its ordinary meaning (i.e., physically attached). In any event, claim 13 is amended to clearly remove it from the interpretation given by the Examiner, and the claimed arrangement is neither disclosed in *Hyun et al.*, nor is it fairly suggested.

Independent claim 14 has been also been amended (like claim 1) to better differentiate "tasks" from "quality standards", and as with claim 1, it is submitted that *Hyun et al.* does not describe any "quality control indicator form wherein quality standards for one of the tasks are listed, the quality standards being optional for completion of the task but affecting the quality of the task's completion" (see comments regarding claim 1 above). Further note that *Hyun et al.* does not disclose or suggest the "machine-readable indicia" recited in claim 14, as discussed above.

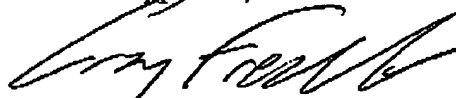
¹ "[I]t is incumbent upon the examiner to identify wherein each and every facet of the claimed invention is disclosed in the applied reference." *Ex parte Levy*, 17 USPQ2d 1461, 1462 (Bd. Pat. App. & Int. 1990), citing to *Lindemann Maschinenfabrik GmbH v. American Hoist and Derrick*, 730 F.2d 1452, 221 USPQ 481 (Fed. Cir. 1984); see also MPEP 707.07(d); 37 CFR §1.104(c)(2).

Claim 14 (as well as *independent claim 20* and *new claim 21*) also further differentiate the recited quality standards from *Hyun et al.* in that these claims require that each quality standard not be paired with a respective completion indicator. *Hyun et al.* plainly does not provide this; consider that even if the "waterproofing" task of *Hyun et al.*'s Fig. 7 was regarded as a quality standard for a task (rather than as a task which requires completion), it is paired with a "Yes"/"No" completion indicator, which is contrary to claim 21. Further, *Hyun et al.* does not in any way suggest that the "waterproofing" task's completion indicator could be removed, since the completion indicator is needed for *Hyun et al.*'s scheduling.

4. In Closing

If any questions regarding the application arise, please contact the undersigned attorney. Telephone calls related to this application are welcomed and encouraged. The Commissioner is authorized to charge any fees or credit any overpayments relating to this application to deposit account number 18-2055.

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